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EXAMINER

SORRELL, ERON J

ART UNIT PAPER NUMBER

2182

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/626,833 | Applicant(s) RAMCHANDRAN, AMIT | |
| | Examiner Eron J. Sorrell | Art Unit 2182 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -- ✓

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>4/10/06</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-9 and 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 6 and 11 both recite the limitation "the plurality of registers" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim.

4. Referring to claims 6 and 11, it is unclear to the Examiner how the applicant intends these claims to be interpreted. The limitation of "a plurality of register files, wherein each register file in the plurality of registers is coupled to a group of data lines in the plurality of data lines," renders the claim unclear to the Examiner because register files generally comprise several registers, whereas the limitation as currently

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recited suggests the opposite relationship. Also it is unclear to the Examiner if the "plurality of data lines," recited at line 11 are the same as "the plurality groups of data lines" or a subset of the groups of data lines. Appropriate correction or clarification is required.

5. Referring to claim 8, the Examiner cannot properly determine the metes and bounds of the claim because it depends from a cancelled claim, so it is unclear what claim 8 is intended to further limit.

6. Claim 15 recites the limitation "the data path lines" in line 2. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 20 recites the limitation "the data path lines" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 10 is rejected under 35 U.S.C. 102(e) as being anticipated by Blaker (US Pub. No. 2002/0013799).

10. Referring to claim 10, Blaker teaches a digital processing system (see figure 6), comprising:

a multiplier (see item labeled "vector mult (xy)" in figure 6);

an accumulator (see item labeled "accum" in figure 6);

a configurable data path coupled to the multiplier and the accumulator in parallel (see data lines connecting "Big Number Cache" to the "vector mult (xy)" and "scalar mult (ui)" and directly to "accum"); and

a direct data path coupled between the multiplier and the accumulator (see bus connecting "vector mult (xy)" to "accum").

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Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 6,7,11,12, and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Abbott et al. (U.S. Patent No. 6,601,158 hereinafter "Abbott").

13. In light of the 112 second paragraph rejection, supra, and in the interest of compact prosecution, claims 6 and 11 will be considered as best understood by the Examiner.

14. Referring to apparatus claims 6 and 11, Wang teaches a data path circuit in a digital processing device (see figure 2), wherein the data path circuit is coupled to a memory bus for obtaining values from a memory, the data path circuit comprising:

a plurality of groups of data lines (see buses in figure 2);

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one or more functional units for performing a digital operation coupled to the plurality of groups of data lines (see item labeled 216 in figure 2); and

a plurality of registers files, wherein the plurality of register files selectively store values from the plurality of groups of data lines so that the values are selectively available on the plurality of groups of data lines (see item labeled 214 in figure 2).

Wang fails to teach the system comprises a plurality of data address generators for coupling the plurality of groups of data lines to the memory bus so that a value from the memory transferred by the memory bus can be placed onto a group of data lines and wherein each register file in the plurality registers is coupled to a single group of data lines in the plurality of data lines in a one-to-one correspondence.

Abbott teaches, in an analogous system, a plurality of data address generators for coupling the plurality of groups of data lines to the memory bus so that a value from the memory transferred by the memory bus can be placed onto a group of data lines (see lines 12-45 of column 9) and wherein each register file in the plurality registers is coupled to a single group of data lines in the plurality of data lines in a one-to-one correspondence (see figure 2 and lines 20-35 of column 6, note

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Abbott also teaches the register files are coupled to the desired data path (data lines) via switches (S0-S4) depending upon the type of operation being performed.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Wang with the above teachings of Abbott. One of ordinary skill in the art would have been motivated to make such modification in order to process complex algorithms as suggested by Abbott (see lines 57-67 of column 9).

15. Referring to claims 7 and 12, Wang teaches 8 groups of 16 data lines are used, wherein each group of data lines is coupled to a register file in the plurality of register files capable of storing 8 16-bit words, wherein each of the data address generators can selectively provide a value on a first group of data lines to a second group of data lines (see item 214 in figure 2 and the associated buses connected thereto).

16. Referring to claims 15 and 20, Wang teaches of registers coupled to the plurality of data lines, the plurality of registers configured to stored values from the plurality of data lines so that the values are selectively available on the plurality of groups of lines (see item labeled 214 in figure 2).

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17. Referring to claims 16-19, Abbott teaches that each of the register files is coupled to a single data lines through a single port and not coupled to at least one of the plurality of data lines (see figure 2 and lines 20-35 of column 6).

18. Claims 8,9,13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view Abbott as applied to claims 6 and 11 above, and further in view of Mirsky (U.S. Pub. No. 2001/0029515).

19. For the purpose of compact prosecution the Examiner will consider claim 8 as if it depended from claim 6.

20. Referring to claims 8,9,13, and 14, the combination of Wang and Abbott teaches the datapath circuit of claim 6 and 11, however, the combination fails to teach the functional units include a multiplier and accumulator, the data path circuit further comprising a coupling of the multiplier to the plurality of data path lines; a coupling of the accumulator to the plurality of data path lines; direct data lines coupled between the multiplier and the accumulator, wherein the direct data

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lines are uni-directional for transferring data from the multiplier to the accumulator.

Mirsky teaches, in an analogous system, the above limitations (see figure 4 and paragraph 52 on page 3).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Wang and Abbott with the above teachings of Mirsky. One of ordinary skill in the art would have been motivated to make such modification to be able to perform complex digital signal processing functions as suggested by Mirsky (see paragraph 52 on page 3).

Response to Arguments

21. Applicant's arguments with respect to claim 10 have been considered but are moot in view of the new ground(s) of rejection.

22. Applicant's arguments filed 4/10/06 have been fully considered but they are not persuasive. The applicant argues:

1) Wang and Abbott teach register files that are multiported and coupled to all of the data lines in Abbott and Wang, therefore Wang and Abbott fails to teach a plurality of groups

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of data lines and a plurality of register files coupled to the groups of data lines in one-to-one correspondence.

23. As per argument 1, the Examiner disagrees. Abbott teaches the register files can have any number of ports (including a single port (see sentence bridging columns 7 and 8)). Abbott also teaches the register files are coupled to the desired data path (data lines) via switches (S0-S4) depending upon the type of operation being performed (see figure 2 and lines 20-35 of column 6). The switches couple the register files to only one of the datapaths therefore Wang teaches the claimed limitation.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened

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statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eron J. Sorrell whose telephone number is 571 272-4160. The examiner can normally be reached on Monday-Friday 8:00AM - 4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on 571-272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EJS

June 15, 2006



KIM HUYNH
SUPERVISORY PATENT EXAMINER
6/19/06